Exhibit 1

AVOCENT INSTALL AND DISCOVERY PROTOCOL SPECIFICATION

DOCUMENT #590064

VERSION: 1.1

January 16, 2002

Avocent Install Discovery Protocol

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Revision Chart

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1. OVERVIEW

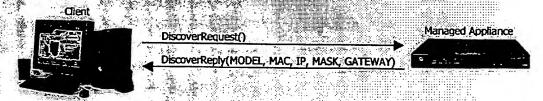
This document describes the Avocent Install and Discovery Protocol (AIDP). Avocent network client applications use this protocol to install and discover Avocent Managed Appliances (for example: CPS, DS1800, and DSR products). Discovery is the ability to locate managed appliances on the network. This includes appliances that do not have an IP address and appliances that do have an IP address. Install is the process of setting the IP configuration of an appliance that does not have an IP address over the network.

This protocol exchanges messages via the User Datagram Protocol (UDP) documented in RFC 768 using UDP port 3211. Appliances must listen for UDP messages on this port. The AIDP protocol uses the same port number as the Avocent Secure Management Protocol (ASMP). However, the AIDP protocol is over UDP, whereas the ASMP protocol is over TCP.

The AIDP protocol also provides a few SNMP commands that allow a client to access certain MIB (Management Information Base) objects in the appliance. A MIB is a set of managed objects that define what data can be obtained from an appliance. In order to support the SNMP commands, a managed appliance must implement an SNMP agent and an enterprise MIB. When using the AIDP protocol only certain OIDs may be retrieved from the appliance. The OIDs defined in the enterprise MIB that are marked with "Discover" in the AVAILABILITY keyword may be retrieved. In addition to these specific enterprise MIB OIDs, the MIB-II OIDs sysName and sysObjectID can be retrieved from the appliance. No other OIDs are accessible through the AIDP protocol. Please refer to the managed appliance's enterprise MIB for which OIDs are marked with the "Discover" valueWhen using the AIDP protocol only certain OIDs may be retrieved from the appliance. The OIDs defined in the enterprise MIB that are marked with "Discover" in the AVAILABILITY keyword may be retrieved. In addition to these specific enterprise MIB OIDs, the MIB-II OIDs sysName and sysObjectID can be retrieved from the appliance. No other OIDs are accessible through the AIDP protocol. Please refer to the managed appliance's enterprise MIB for which OIDs are marked with the "Discover" value When using the AIDP protocol only certain OIDs may be retrieved from the appliance. The OIDs defined in the enterprise MIB that are marked with "Discover" in the AVAILABILITY keyword may be retrieved In addition to these specific enterprise MIB OIDs, the MIB-II OIDs sysName and sysObjectID can be retrieved from the appliance. No other OIDs are accessible through the AIDP protocol. Please refer to the managed appliance's enterprise MIB for which OIDs are marked with the "Discover" value.

1.1 Discovery

Discovery is accomplished when the client sends a UDP broadcast to the subnet containing the appliances. All appliances on the subnet must report their IP configuration information back to the client. Even appliances that do not have an IP address must report their Model and MAC address back to the client.



This requires that appliances that do not have an IP address be able to listen for Ethernet packets even when no IP address has been assigned to the appliance. They also must be able to create an IP/UDP reply packet when they do not have an IP address. This Discover Reply packet should fill in the following fields as indicated below if it does not have an IP address.

Ethernet source address = MAC address of the appliance

Ethernet destination address = Ethernet source address from Discover Request message

IP source address = "12.3.4"

IP destination address = IP source address from Discover Request message

UDP Discover Reply MAC = MAC address of the appliance

UDP Discover Reply IP = "0.0.0.0" UDP Discover Reply Mask = "0.0.0.0" UDP Discover Reply Gateway = "0.0.0.0"

Note: For details see the protocol section that follows.

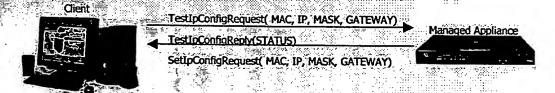
Note: If an appliance already has an IP address assigned, the client can send the discover message directly to the IP address of the appliance. It does not need to send a broadcast.

Note: When operating across routers, UDP subnet broadcast must be enabled in the router for UDP port 3211.

1.2 Installation

Installation allows the client to remotely set the IP configuration of appliances that do not have an IP address. This configuration information includes the IP address, subnet mask and gateway for the managed appliance. This is a two-step process. Step 1 requires that the new configuration be tested and Step 2 installs the final IP address. Testing is required so that the appliance does not get configured with an invalid gateway or subnet mask.

During Step 1 the client sends a UPD broadcast containing the MAC address, IP address, subnet mask and gateway to the appliance. Only the appliance with the specified MAC address should reply to this request. If the reply is received, then Step 2 is performed. Step 2 permanently sets the IP configuration into the appliance.



SetIpConfigReply(STATUS)

Upon receipt of a Test IP Configuration Request, an appliance with no IP address should temporarily set its IP configuration to the values received in the request. The appliance should then use the normal IP/UDP stack to send the Test IP Configuration Reply message so that the normal flow of messages is tested (subnet mask, ARP, etc). If an invalid gateway or subnet mask was specified in Step I, the Test IP Configuration Reply message will not get returned to the client. Therefore the client will not send a Set IP Configuration Request and the appliance IP configuration information will not be permanently set. Only upon receiving the Set IP Configuration message should the appliance permanently set the IP configuration information.



2. PROTOCOL

2.1 AIDP Message

The AIDP Message is made up of a series of bytes. These bytes contain three distinct parts (Header, Record Data, and Trailer) as indicated below:

š	177. T-0.00031367. CT-0.30000000	924007,0000000200000520000000000000000		è
,	11.25	D D	Trailer	ì
>	rieader	Record Data	1 ratier	*****
				ě
	1212 BYTES	Variable Length	1 PVTC	٤
Š	*XXX COLDERS CONTROL OF THE	I WIND ECUSION	LDIIL	

2.1.1 Header

The AIDP Header consists of the following fields:

Field Name	Length	· 特别 (4)	Description	
SOH	1	The start flag marking the beginning of a message. Heading (0x01).		essage. Start of
Signature	4	Unique Signature ID indicating that this is an Avocent Install Discovery Protocol message. This value will always be the ASCII representation of "AIDP".		an Avocent Install will always be the
Sequence Number	2	Unique packet sequence invalue increments for each for future use. This value Range is (1::65535).	packet sent. The	value 0 is reserved
Command ID	1	Contains the unique code for the AIDP comma the message. The values 0x00 and 0xFF are reuse. COMMAND REQUEST ID		mand contained in reserved for future
		Discover	0×01	0x81
		TestIpConfigRequest-	0×02	0x82
		SetIpConfigRequest	0x03	0x83
**		SnmpGet	0x10	0 x90
		SnmpGetNext	0x11	0x91
Record Length	4	The total number of bytes This value is sent in Netw 4294967295).	in the Record Dat ork Byte Order. R	a field that follows. ange is (0

2.1.2 Record Data

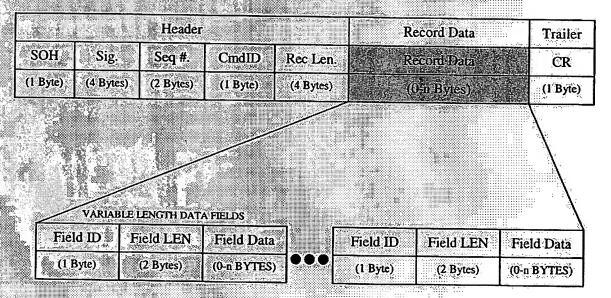
The Record Data portion is a variable length field containing the data to send. The data is encoded based upon the AIDP command request/reply ID. See the appropriate Commands section for the specific encoding rules for the different request types.

2.1.2.1 Variable Length Data Fields

Certain AIDP commands may contain variable length data fields encoded within the Record Data portion of the AIDP message. There can be more than one variable length data field in the Record Data portion. These variable length data fields will use the following extensible record format:

Field Name I	ength	Description
Field ID	Ž.	Contains a unique Field ID for this field within the record data. A Field ID with a value of 0xFF terminates the record data and is not followed by the remainder of this field.
Field Length Field Data	2	The total number of bytes in the Field Data that follows. This value is sent in Network Byte Order. Range is (0.65535).
Field Data	0-n	Contains the data for this field:

The following shows how the Variable Length Data Fields would appear in the Record Data portion of an AIDP message:

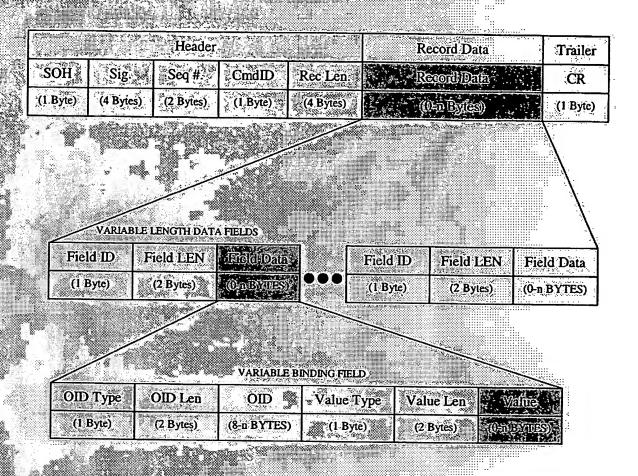


Note: The Variable Length Data Fields contained in the Record Data portion of the message may appear in any order, unless stated otherwise.

2.1.2.2 Variable Binding Fields

In some of the AIDP commands (specifically the Snmp commands), the Variable Length Data Fields of the Record Data may contain a Variable Binding Field. These Variable Binding Fields contain further encoding.

The following shows how the Variable Binding Field would appear in the Field Data sections of an AIDP message:



The Variable Binding Field encoding is described below:

2	The build of the Marche West	Singer a result to the state of
Sub-Field Name	Length:	Description
OID Type		Type indicating this is an OID. Value = 0x06 (ASN_OBJECTIDENTIFIER).
OID Length	2	Contains the number of bytes in the OID that follows. This value is sent in Network Byte Order:
OID Value	8-n	Contains the OID as an array of INTS (each INT being 4 Bytes). The minimum length is 8 because the smallest OID that can be used in a command is 2 integers (example: 0.0). In has to be a multiple of 4.
Value Type:		Contains the type of the Variable Binding Value as follows: 0x02 = ASN_INTEGER 0x03 = ASN_BITS 0x04 = ASN_OCTETSTRING
· · · · · · · · · · · · · · · · · · ·		0x05 - ASN_NULL 0x06 - ASN_OBJECTIDENTIFIER 0x30 - ASN_SEQUENCE ASN_SEQUENCEOF

Company Confidential

Value Length	0x46 - ASN_COUNTER64 0x47 - ASN_UNSIGNED32 2 Contains the length of the Variable Binding Value t	that
	Contains the length of the Variable Binding Value to follows. This value is sent in Network Byte Order. Contains the Variable Binding Value. See below for how value is encoded.	

The Value section of the Variable Binding field is encoded differently based upon the Value Type as listed below:

ASN_INTEGER (0x02)

 Value Type	Value Lên	Value 4:
(1 Byte)		

ASN_COUNTER32 (0x41), ASN_GUAGE32 (0x42), ASN_TIMETICKS (0x43)

×		The state of the s	Sec. 1997
9	Value Type	SUCCESSION OF SUCE OF	The second secon
	The Company		A COMPANY OF THE PARTY OF THE P
0	A GIUC 11 VICE		
•		- Alleganian and a second	CONTRACTOR OF THE PARTY
В	The state of the second	11,111. 1 (c. 1	To we seed to
ľ	xx / Ritto	17 D. +	"(A D) "
ы	* (1 Byte) *	*XIZ:DVIENT	14 BVIECT
1	A CONTRACTOR OF THE PARTY OF TH	- «(2 Bytes)	2000

ASN_COUNTER64 (0x46)

W	Value Type//	∛Value Len	Value :
	(1 Byte)	(2 Bytes) 🐭	

ASN_OCTETSTRING (0x04), ASN_RFC1213_DISPSTRING

Waltiestype:	Walneiten		*Value () (crt/544) 2	
12,00	(2 4) (6)	(1 Byte) (1 B	in BYTES lyte) (1 Byte) (1 Byte)	1

ASN_OBJECTIDENTIFIER (0x06)

Walte Type	Valietten	Value / Value
(1 Byte)	(O Bytes)	1 – n INT OID values
	2(2 Dytes)	(4 Bytes) (4 Bytes) (4 Bytes) (4 Bytes)

ASN_NULL (0x05)

	Contract Con	The second of th	٠.
i	Weiter Trans	Value Len Value	ſ
i.	AGTITE TINDE	Agine result to Agine and a	ı
	THE PARTY OF THE P		
4	(1 Byte)	(2 Bytes) (NO VALUE)	ı

2.1.3 Trailer

Every AIDP message ends with a Carriage Return (CR) byte (0x0D) to mark the end of a message

2.2 Commands

2.2.1 Discover

2.2.1.1 Request Message (0x01)

This message is sent from a Client to a Managed Appliance to request that the appliance report it's information (Model Type, MAC address, IP address, subnet mask, and gateway address).

	Field Name	Length	Description 4
	SOH	1	Start of Heading: Value = 0x01.
- 2	Signature *	4	Unique Signature ID. Value = "AIDP"."
ADER	Sequence Number	2	Unique packet sequence number.
HEA	Command ID	3771	Unique code for the command contained in this message.
	i.e.		Value = 0x01 (Discover Request command)
	Record Length	4	The total number of bytes in the Record Data field that follows:
TA	Varia	ble Length I	Data Fields. See below for description of the specific fields.
ORD DA			A STATE OF THE STA
REC	Field Terminator	12.0	Terminates the record data. Value = 0xFF.
AILER	CR.	1	End of message flag. Value = 0x0D.
TR			

Note: There are no Variable Length Data Fields in a Discover Request Message. The Record Length value will always be 1 to account for the Field Terminator.

There are no Variable Length Data Fields in the Discover Request Message (0x01).

Upon receipt of the Discover Request Message, the managed appliance will generate a Discover Reply Message containing it's Model Type, MAC address, IP address, subnet mask, and gateway address.

2.2.1.2 Reply Message (0x81)

This message is sent from a Managed Appliance to a Client in response to a Discover Request message.

	Field Name	Length	Description
****	SOH AMERICAN	1	Start of Heading. Value = 0x01
	Signature ID	4	Unique Signature ID. Value ≡ "AIDP".
ADER	Sequence Number	*2 _*	Unique packet sequence number. This number must match the sequence number of the Discover Request message that this reply is for.
田田	Command ID	1	Unique code for the command contained in this message
8 2	1	W 64	Value = 0x81 (Discover Reply command)
	Record Length.	4	The total number of bytes in the Record Data field that follows.
RECORD DATA	• Required Fields		* Field ID 1 = Appliance Model Type Field * Field ID 2 = MAC Address Field * Field ID 3 = IP Address Field * Field ID 4 = Subnet Mask Field * Field ID 5 = Gateway Address Field
	Field Terminator	1	Terminates the record data. Value=0xFF:
TRAILER	CR	1	End of message flag. Value = 0x0D.

The following describes the Variable Length Data Fields of a Discover Reply Message (0x81):

Appliance Model Type Field:

Namo	Length	Descrip	tion .
Field ID	1.00	The Appliance Model Type Field ID.	Value = 0x01.
Field Length	2	The length of the Model Type Field D	ata field that follows.
		Value = 2.4 This value is sent in Netwo	TERROLOGICAL TO NOTE SELECTION OF A SECTION OF THE
Field Data	. 2	Value indicating the appliance mod	programme and the contract of the programme of the programme and t
	26,2526. 90.	Network Byte Order. The possible val	lues are as follows:
**		0x0001 = Avocent CPS	310
	e e	0x0002 - Avocent CPS	1610
		0x0003 - Avocent DS18	800
		0x0004 - Avocent DSR	1161
		- 0x0005 - Avocent DSR	2161
		0x0006 - Avocent DSR	4160
		0x0007 - Compaq DSR	1161
		0x0008 - Compaq DSR	3161

Note: This field will always appear in the message.

MAC Address Field:

Name	Length	Description
Field ID		The MAC Address Field ID. Value = 0x02.
Field Length	2	The length of the MAC Address Field Data field that follows.
Field Data	6	Value = 6. This value is sent in Network Byte Order. Value indicating the appliance's MAC address. This value is sent in
2 7		Network Byte Order:

Note: This field will always appear in the message

IP Address Field:

Name	Length	Description
Field ID	1	The IP Address Field ID. Value = 0x03.
Field Length	2	The length of the IP Address Field Data field that follows. Value = 4. This value is sent in Network Byte Order.
Field Data	4	Value indicating the appliance's IP address. This value is sent in Network Byte Order.
		If the appliance has not been assigned an IP address yet, it should respond with an IP address of 0.0.0.0 (0x00,0x00,0x00,0x00).

Note: This field will always appear in the message.

Subnet Mask Field:

Name	Length	Description (
Field ID	11.	The Subnet Mask Field ID. Value = 0x04
Field Length	2.	The length of the Subnet Mask Field Data that follows. Value = 4. This value is sent in Network Byte Order.
Field Data	4	Value indicating the appliance's subnet mask. This value is sent in Network Byte Order. If the appliance has not been assigned a subnet mask yet, it should respond with a value of 0.0.0.0 (0x00 0x00 0x00 0x00):

Note: This field will always appear in the message

Gateway Address Field:

Mame Name	Length	Description
Field ID	1	The Gateway Address Field ID. Value = 0x05
Field Length	2	The length of the Gateway Address Field Data that follows.
	\$18.884.c	Value = 4. This value is sent in Network Byte Order.
Field Data	4	Value indicating the appliance's gateway address. This value is sent in Network Byte Order.
		If the appliance has not been assigned a gateway address yet, it should respond with a value of 0.0.0.0 (0x00 0x00 0x00 0x00).

Note: This field will always appear in the message.

Note: The above Fields may appear in any order.

2.2.2 Test IP Configuration

2:2.2.1 Request Message (0x02)

This message is sent from a Client to a Managed Appliance to test if a given IP address and gateway address is valid for the appliance. It is used to determine if the appliance can route a message back to the client using the given IP and gateway addresses.

3.7	Wed Name	Length	Description
70.8 AA	SOH	1	Start of Heading: Value = 0x01
8	Signature	4	Unique Signature ID. Value = "AIDP".
DE	Sequence Number	2,	Unique packet sequence number
HEA	Command ID	1	Unique code for the command contained in this message. Value = 0x02 (Test IP Configuration Request command)
	Record Length	2.46	The total number of bytes in the Record Data field that follows.
RECORD DATA			Data Fields. See below for description of the specific fields: * Field ID 1 = MAC Address Field * Field ID 2 = IP Address Field * Field ID 3 = Subnet Mask Field * Field ID 4 = Gateway Address Field
R	* Required Fields		
	Field Terminator	1	Terminates the record data Value = 0xFF.

CR End of message flag. Value = 0x0D.	1	A COMMAND AND AND AND AND AND AND AND AND AND	
TRAIL	The second secon	TRAILER STATE TO THE STATE OF T	End of message flag. Value = 0x0D

The following describes the Variable Length Data Fields of a Test IP Configuration Request Message (0x02):

MAC Address Field:

Name	Length	Description
Field ID	1	The MAC Address Field ID: Value = 0x01.
Field Length	2	The length of the MAC Address Field Data field that follows.
		Value = 6. This value is sent in Network Byte Order.
Field Data	6	Value indicating the appliance's MAC address. This value is sent in Network Byte Order.

Note: This field will always appear in the message.

IP Address Field:

Name	Length	Description
Field ID	1	The IP Address Field ID. Value = 0x02.
A ICIO ID	1	THE IT Address Field ID. Value = 0x02.
Field Length	2	The length of the IP Address Field Data field that follows.
3.		Value = 4. This value is sent in Network Byte Order.
Field Data	4	Value indicating the appliance's IP address. This value is sent in
	****	Network Byte Order.

Note: This field will always appear in the message.

Subnet Mask Field:

	Name	Length.	Description
A STATE OF THE STA	Field ID	1	The Subnet Mask Field ID. Value = 0x03.
	Field Length		The length of the Subnet Mask Field Data that follows.
,			Value = 4. This value is sent in Network Byte Order.
	Field Data	4	Value indicating the appliance's subnet mask. This value is sent in Network Byte Order.

	An agentalia of the		
	MALE STATE OF	200	Network Byte Order
			. A.Sarrick Comments
*		1. N.	The state of the s

Note: This field will always appear in the message

Gatewaŷ Address Field:

Name .	ALength?	Description .
Field ID	1,00	The Gateway Address Field ID: Value = 0x04.
Field Length		The length of the Gateway Address Field Data that follows:
Field Data		Value = 4. This value is sent in Network Byte Order:
Field Data		Value indicating the appliance's gateway address. This value is sent in Network Byte Order.

Note: This field will always appear in the message.

Note: The above Fields may appear in any order.

Upon receipt of the Test IP Configuration Request Message, the managed appliance will generate a Test IP Configuration Reply Message indicating the status of the request.

2.2.2.2 Reply Message (0x82)

This message is sent from a Managed Appliance to a Client to indicate the status of the Test IP Configuration Request message.

	Fored Names	Length '	Description Description
	SOH	, 1 t	Start of Heading Value = 0x01:
	Signature	*4	Unique Signature ID: Value = "AIDP":
ADER	Sequence Number	2	Unique packet sequence number. This number must match the sequence number of the Test IP Configuration Request message that this reply is for.
HE	Command ID	1	Unique code for the command contained in this message. Value = 0x82 (Test IP Configuration Reply command)
	Record Length	4	The total number of bytes in the Record Data field that follows.
RECORD DATA	Variable Property of the Control of	able Lengtl	a Data Fields. See below for description of the specific fields. * Field ID 1 = Status Field
8	Field Terminator	1	Terminates the record data. Value = 0xFF.

CR 1 End of message flag. Value = 0x0D	(4.5.44) (4.5.
--	--

The following describes the Variable Length Data Fields of a Test IP Configuration Reply Message (0x82):

Status Field:

	ime.	Length	Description we
Field ID		1	The Status Field ID. Value = 0x01?
Field Le	ength (The length of the Status Data field that follows: Value = 2. This value is sent in Network Byte Order.
Field Da	ata 😘 🛴	2	Value indicating the status of the request. This value is sent in Network Byte Order. See status codes below for possible values.

Note: This field will always appear in the message.

Status codes:

Deput 10 30 10 10 10 10 10 10 10 10 10 10 10 10 10	Description 4
	Success, No error occurred.
IP ADDRESS_ALREADY EXISTS	The appliance already has an IP address.
	An invalid request was sent to the appliance.
APPLIANCE_ERROR	The appliance was unable to process the request do to an internal error. (For example: Out of memory, Not enough resources).

Please refer to section 2.2.6 Status Codes for a list of the status code values.

2.2.3 Set IP Configuration

2.2.3.1 Request Message (0x03)

This message is sent from a Client to a Managed Appliance to assign an IP address, subnet mask, and gateway address to the appliance.

	Field Name	Length	Description
***	SOH	1	Start of Heading.: Value = 0x01.
~	Signature	4	Unique Signature ID. Value = "AIDP".
ADER	Sequence Number	2	Unique packet sequence number.
HEA	Command ID	1	Unique code for the command contained in this message
Ţ	1.7		Value = 0x03 (Set IP Configuration Request command)
	Record Length	4	The total number of bytes in the Record Data field that follows.
*RECORD DATA	* Required Fields		* Field ID 1 = MAC Address Field * Field ID 2 = IP Address Field * Field ID 3 = Subnet Mask Field * Field ID 4 = Gateway Address Field
	Field Terminator	1	Terminates the record data. Value = 0xFF.
TRALLER	CR .	1	End of message flag. Value = 0x0D.

The following describes the Variable Length Data Fields of a Set IP Configuration Request Message (0x03):

MAC Address Field:

A STATE OF THE PERSON OF THE P	A CONTRACTOR OF THE CONTRACTOR
Name Length	
Longui	Description
A CAMPAGE AND A	是是一种,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就
Field ID	
Licid ID	The MAC Address Field ID. Value = 0x01.
	A STATE OF THE STA
Field Length 2 ***	The length of the MAC Address Field Data field that follows.
200 200 200 200 200 200 200 200 200 200	
Sports over the control of the second of the	Value = 6. This value is sent in Network Byte Order.
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Field Data 6	Value indicating the appliance's MAC address. This value is sent in
A TOTAL .	value indicating the appliance's MAC address. Inis value is sent in
* * * * * * * * * * * * * * * * * * * *	Network Byte Order.
The same of the sa	

Note: This field will always appear in the message

IP Address Field:

Name 1	Length	Description
Field ID	1 . The IP	Address Field ID. Value = 0x02:
Field Length	2 The len	gth of the IP: Address Field Data field that follows.
		4. This value is sent in Network Byte Order.
Field Data	4 Value	indicating the appliance's IP address. This value is sent in
	Networ	k Byte Order

Note: This field will always appear in the message.

Subnet Mask Field:

Name	Length	Description
Field ID	1	The Subnet Mask Field ID. Value = 0x03.
Field Length	300500000000000000000000000000000000000	The length of the Subnet Mask Field Data that follows. Value = 4. This value is sent in Network Byte Order.
Field Data	4	Value indicating the appliance's subnet mask. This value is sent in Network Byte Order.

Note: This field will always appear in the message.

Gateway Address Field:

	Name	Length	Description
200	Field ID	1	The Gateway Address Field ID. Value = 0x04.
\$2488 	Field Length		The length of the Gateway Address Field Data that follows.
Sec.			Value = 4. This value is sent in Network Byte Order.
	Field Data	4	Value indicating the appliance's gateway address. This value is sent in
i.	All San		Network Byte Order.

Note: This field will always appear in the message

Note: The above Fields may appear in any order

Upon receipt of the Set IP Configuration Request Message, the managed appliance will generate a Set IP Configuration Reply Message indicating the status of the request.

2.2.3.2 Reply Message (0x83)

This message is sent from a Managed Appliance to a Client to indicate the status of the Set IP Configuration Request message.

12/10	A ACCUMANTO	Indiana and	Secretary of the second
16.	- Will Chine	Wength .	Description
	SOH	# d - **	Start of Heading. Value = 0x01:
	Signature	4	Unique Signature ID. Value = "AIDP":
ADER	Sequence Number	2,	Unique packet sequence number. This number must match the sequence number of the Set IP Configuration Request message that this reply is for.
HE	Command ID	1	Unique code for the command contained in this message.
			Value = 0x83 (Set IP Configuration Reply command)
88	Record Length	4	The total number of bytes in the Record Data field that follows:
RECORD DATA	* Required Fields	ble Length	Data Fields: See below for description of the specific fields. * Field ID:1 = Status Field
R	Field Terminator	*1* *	Terminates the record data Value ≅ 0xFF.
TRAILER	CR THE STATE OF TH		End of message flag. Value = 0x0D

The following describes the Variable Length Data Fields of a Set IP Configuration Reply Message (0x83):

Status Field:

Raine	length.	Description
Field ID	1.	The Status Field ID. Value = 0x01.
Field Length	2 🗴	The length of the Status Data field that follows: Value = 2. This value is sent in Network Byte Order.
Field Data	*2 *****	Value indicating the status of the request. This value is sent in Network Byte Order. See status codes below for possible values.

Note: This field will always appear in the message.

Description
Success, No error occurred.
The appliance already has an IP address.
An invalid request was sent to the appliance.
The appliance was unable to process the request do to an internal error. (For example: Out of memory, Not enough resources).
200

Please refer to section 2.2.6 Status Codes for a list of the status code values.

2.2.4 Snmp Get

2.2.4.1 Request Message (0x10)

This message is sent from a Client to a Managed Appliance to retrieve the value for an OID from the managed appliance.

16	Kield Name	Length	Description 4
3.0	SOH	1,	Start of Heading. ¿Value = 0x01:
2	Signature	4	Unique Signature ID. Value = "AIDP".
HEADER	Sequence Number	22	Unique packet sequence number
田	Command ID	101	Unique code for the command contained in this message.
			Value = 0x10 (Snmp Get Request command)
,8xc	Record Length	4 *	The total number of bytes in the Record Data field that follows.
RECORD DATA	* Required Fields "."	ble Length	Data Fields. See below for description of the specific fields. * Field ID 1 = Variable Binding Field
RE	Field Terminator	1	Terminates the record data. Value = 0xFF.
TRAILÉR	CR		End of message flag. Value ≡ 0x0D.

The following describes the Variable Length Data Fields of an Sump Get Request Message (0x10). The variable binding contains the OID that the client wants to get the value for from the appliance. Please refer to section 2.1.2.2 Variable Binding Fields to see how Variable Bindings are encoded.

Variable Binding Field:

		Name	Length	(Description)
Fi	eld I	D.		The Variable Binding Field ID. Value = 0x01.
Fi	Field Length		*2	The total number of bytes in the Variable Binding Field that follows. This value is sent in Network Byte Order.
	Get	OID Type	1	Type indicating this is an OID. Value = 0x06 (ASN_OBJECTIDENTIFIER).
)ID to	OID Len	2	The length of the OID to get. This value is sent in Network Byte Order.
Jata		OID	₩8-n	The OID to get the value for.
Field	OID	Value Type	1	The type of the Value. Should always be set to 0x05 (ASN_NULL) for an Snmp Get Request Message.
) Jo an	Value Len	* 2	Length of the Value. Should always be set to 0x0000 for an Snmp Get Request Message. This value is sent in Network Byte Order.
	∞°.Va	Value	0	Value for the OID. Should never be a value for this field in an Snmp Get Request Message.

Note: There may be multiple Variable Binding Fields in an Snmp Get Request Message.

Note: When using the AIDP protocol only certain OIDs may be retrieved from the appliance. The OIDs defined in the enterprise MIB that are marked with "Discover" in the AVAILABILITY keyword may be retrieved. In addition to these specific enterprise MIB OIDs, the MIB-II OIDs sysName and sysObjectID can be retrieved from the appliance. No other OIDs are accessible through the AIDP protocol. Please refer to the managed appliance's enterprise MIB for which OIDs are marked with the "Discover" value.

Upon receipt of the Snmp Get Request Message, the managed appliance will get the values for the OIDs specified in the variable binding values. It will then generate an Snmp Get Reply message to the client. The message will contain the status of the request and the values for the OIDs if the request was successful 🧀

The following is an example of an Snmp Get Request Message (0x10) for the MIB-II sysName OID (1.3.6.1.2.1.1.5) %

1	-				Chanded Living South	AV. I'd Print Co.	Abbegeettiitiilisettii	:::::::	
	S.C. K.	and the second second	Header		AND THE RE	42	Record Data	100	
- who	SOH	Sig.		Cmd	Rec Len ***	Wise Variable Times	Variable Binding Len	OID	OID
	1 2	"AIDP"	ंशी ंै	116 💸	46		42	4.30.4K	Len 36
0,0	.01	41.53.4D 50	00 01	10 ⊗	₹00.00 00 2E ⊕	******* 01*****************************	=== 00 2A	06	00 24

. 3	A CONTROL OF THE PROPERTY OF T
	Record Daini (cont)
	OD Value
	136121150
	00.00 00 01 00.00 03 00 00 00 06 00 00 00 01 00 00 02 00.00 00 01 00 00 01 00 00 05 00 00 00 00
۲,	00 00 00 00 00 00 00 00 00 00 00 00 00

1	Re Re	cord Data (con	(i)	Manager Constitution	ĺ
本のない	Value Type	Value Len	Term.	Trailer 3	ı
No.	5 🚛	0.0	FF accept	CR CR	l
	05	00.00	* FF. ***	0D	

2.2.4.2 Reply Message (0x90)

This message is sent from a Managed Appliance to a Client in response to an Snmp Get Request message. It will contain the status of the request and the values for the OIDs if the request was successful

ON.	Field Name	Length	December 1
	SOH	1	Start of Heading. Value = 0x01.
	Signature	4	Unique Signature ID . Value = "AIDP".
ADER	Sequence Number	2	Unique packet sequence number. This number must match the sequence number of the Snmp Get Request message that this reply is for:
田	Command ID	1	Unique code for the command contained in this message. Value = 0x90 (Snmp Get Reply command)
P.S.	Record Length	4 3 %	The total number of bytes in the Record Data field that follows.
RECORD DATA	* Required Fields	ble Length	Data Fields: See below for description of the specific fields. * Field ID 1:= Snmp Error Status Field * Field ID 2 = Snmp Get Response Error Index Field * Field ID 3 = Variable Binding Field
,	Field Terminator	*1	Terminates the record data. Value = 0xFF.
TRAILER	CR		End of message flag. Value = 0x0D.

The following describes the Variable Length Data Fields of an Snmp Get Reply Message (0x90):

SNMP Errror Status Field:

Name	Length	Description
Field ID	1	The SNMP Error Status Field ID. Value = 0x01.
Field Length	2	The length of the SNMP Error Status that follows. This value is sent in
Field Data		Network Byte Order:
File Data	2	The SNMP Error Status. This value is sent in Network Byte Order. See the SNMP Error status codes below for possible values.

SNMP Error Status codes:

Error : The Control of the Control o	Description
NOERROR	SNMP RFC1157 Error Status - No Error
TOOBIG	SNMP RFC1157 Error Status - Packet is too big
NOSUCHNAME	SNMP RFC1157 Error Status - No Such Name
BADVALUE	SNMP RFC1157 Error Status - Bad Value
READONLY	SNMP RFC1157 Error Status - Read Only
GENERR	SNMP/RFC1157 Error Status – General Error
INVALID_REQUEST	An invalid request was sent to the appliance.
APPLIANCE_ERROR	The appliance was unable to process the request due to an internal error. (For example: Out of memory, Not enough resources).

Please refer to section 2.2.6 Status Codes for a list of the status code values.

SNMP GetResponse Errror Index Field:

Name	Length	Description
Field ID	1	The SNMP GetResponse Error Index Field ID. Value = 0x02.
Field Length	2	The length of the SNMP GetResponse Error Index that follows: This value is sent in Network Byte Order.
Field Data	2	The SNMP GetResponse Error Index. See RFC-1157. This value is sent in Network Byte Order. This value should be 0x0000 if the value for the SNMP Error Status Field is NOERROR, INVALID_REQUEST, or APPLIANCE_ERROR.

Variable Binding Field:

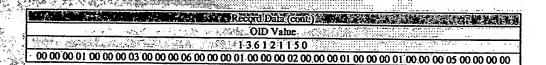
In an Snmp Get Reply message the variable binding contains the OID that was contained in the corresponding Snmp Get Request message as well as the value for the OID. Please refer to section 2.1-2.2 Variable Binding Fields to see how Variable Bindings are encoded

	Name	feually	Description
Field	D, ~**	1	The Variable Binding Field ID. Value = 0x03.
Field	Lêngth	2	The total number of bytes in the Variable Binding Field that follows. This value is sent in Network Byte Order.
Cier 🖎	OID Type	12	Type indicating this is an OID. Value = 0x06 (ASN_OBJECTIDENTIFIER).
ia Im fo	OID Len:	2.	The length of the OID to get. This value is sent in Network Byte Order.
	OD \$	3 8-n ∞	The OID to get the value for.
Field	Value Type	1	Value type for the OID requested.
	Válue Len	.2	Length of the Value. This value is sent in Network Byte Order.
Vall	Value	0-n	The value for the OID requested.

Note: There may be multiple Variable Binding Fields in an Snmp Get Reply Message. There should be one for every Variable Binding that was requested in the Snmp Get Request Message.

The following is an example of an Snmp Get Reply Message (0x90) that would be returned in response to an Snmp Get Request for the MIB-II sys Name OID (1.3.6.1.2.1.1.5):

4		Header 5			Term Co		Marie R	cond Da	la di Mari	Last I	1
SOH	Sig.	SEQ *	CE O	Rec. Len		Samp Error	Error	Bind	⊪ Var Bind I en		OID Len
1	"ASMP"	ી	144	69 🖦	4001 A				60	6	36
:01	41 53 4D 50	00 01	90	00 00 00 45	∵01 ≅	₹00 02 ∰	00 00	₹03.7	₹00 3C	06	00 24



		Resort Date (cont)	79.0 KW	Trailerast
Value Type	Value Len	Value	Terni.	Trailer
4	18	"MANAGED_APPLIANCE!"	FF	CR
.04	00 12	4D 41 4E 41 47 45 44 5F 41 50 50 4C 49 41 4E 43 45 31	FF	OD

2.2.5 Snmp Get Next

2.2.5.1 Request Message (0x11)

This message is sent from a Client to a Managed Appliance to retrieve the value for the next OID that is specified in a variable binding from the managed appliance.

	o Held Name	Length	Description
1	SOH STATE	2721	Start of Heading: Value = 0x01.
R	Signature :	(4)	Unique Signature ID. Value = "AIDP".
DE	Sequence Number	1 2	Unique packet sequence number.
TEA	Command ID	1	Unique code for the command contained in this message.
			Value = 0x11 (Snmp Get Next Request command)
	Record Length	4	The total number of bytes in the Record Data field that follows.
CORD DATA	* Required Fields	ble Length I	Data Fields. See below for description of the specific fields. * Field ID 1 = Variable Binding Field
* RE	Field Terminator	1	Terminates the record data. Value = 0xFF.
TRAILER	CR		End of message flag. Value = 0x0D.

The following describes the Variable Length Data Fields of an Snmp Get Next Request Message (0x11). The variable binding contains the OID that the client wants to get the next value for from the appliance. Please refer to section 2.1.2.2 Variable Binding Fields to see how Variable Bindings are encoded.

Variable Binding Field:

		THE RESERVE OF THE PARTY OF THE	
1	Name	Length	Description
ld 🏻		3.1	The Variable Binding Field ID. Value = 0x01.
ld L	ength (2 · · · · · · · · · · · · · · · · · · ·	The total number of bytes in the Variable Binding Field that follows. This value is sent in Network Byte Order.
Next	OID Type	1 %	Type indicating this is an OID. Value = 0x06 (ASN_OBJECTIDENTIFIER).
D to Gel	OID Len	2	The length of the OID to get next. This value is sent in Network Byte Order.
10	OID.	8-n	The OID to get the next-value for:
امً		15	The type of the Value. Should always be set to 0x05 (ASN_NULL) for an Snmp Get Next Request Message.
lue of OI	Value Len	2	Length of the Value. Should always be set to 0x0000 for an Snmp Get Next Request Message. This value is sent in Network Byte Order.
Va	Value	0	Value for the OID. Should never be a value for this field in an Snmp Get Next Request Message.
	ilie of OID - OID to Get Next	OD Len	Id Length 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3

Note: There may be multiple Variable Binding Fields in an Snmp Get Next Request Message.

Note: When using the AIDP protocol only certain OIDs may be retrieved from the appliance. The OIDs defined in the enterprise MIB that are marked with "Discover" in the AVAII ABILITY keyword may be retrieved. In addition to these specific enterprise MIB OIDs, the MIB-II OIDs sysName and sysObjectID can be retrieved from the appliance. No other OIDs are accessible through the AIDP protocol. Please refer to the managed appliance's enterprise MIB for which OIDs are marked with the "Discover" value.

Upon receipt of the Samp Get Next Request Message, the managed appliance will get the values for the next OIDs specified in the variable binding values. It will then generate an Samp Get Next Reply message to the client. The message will contain the status of the request and the values for the next OIDs if the request was successful

The following is an example of an Snmp Get Next Request Message (0x11) for the MIB-II sysName OID (1.3.6.1.2.1.1.5):

W. WER	U/(IAM)	Header	TAXAT.	TALLY S	7.1	2 ARRecord	1000 100 00 00 00 00 00 00 00 00 00 00 0	
SOH	Sig	SEQ #	Cmd ID	Rec. Len	Variable A	** Variable	OID Type	OID Len
1	*"ASMP"	** 3		46	34 100 1 AMAIN	34 542 MARK	##W/K*******	126
<u>,01</u>	41,53 4D 50	.00.01€	% 11:	♦ 00 00 00 ₩ 2E ↓	**************************************	00 2A****	.06	.00.24

*	Record Data (Cur)
1	OD Value
	136121150 ***
	00 00 00 11 00 00 00 00 00 00 00 00 00 0
1	00 00 00 01 00 00 03 00 00 06 00 00 00 01 00 00 02 00 00 00 10 00 00 01 00 00 00 01 00 00

	Recor	d Data (cont.)	V (187	A La Trailer de	Triba.
3	Value Type	Value Len 🚀	Term.	Trailer	N. Delica
	☆☆ ` 5 , ` * :	~~	₩FF 🍇	CR (CR	The same
8	- 05 · · · · · · · · · · · · · · · · · ·	00 00	FF. 8	*	

2.2.5.2 Reply Message (0x91)

This message is sent from a Managed Appliance to a Client in response to an Snmp Get Next Request message. It will contain the status of the request and the values for the next OIDs if the request was successful

- Turbon			
112	a Field Name	Length	See See a Description & St.
	SOH	1	Start of Heading: Value = 0x01:
	Signature	4	Unique Signature ID. Value = "AIDP".
ADER	Sequence Number	2 🚃	Unique packet sequence number. This number must match the sequence number of the Snmp Get Next Request message that this reply is for.
田田	Command ID	1	Unique code for the command contained in this message.
	- Jack 1988		Value = 0x91 (Snmp Get Next Reply command)
	Record Length	4	The total number of bytes in the Record Data field that follows.
RECORD DATA	* Required Fields	ble Length 1	Data Fields. See below for description of the specific fields: * Field ID 1 = Snmp Error Status Field * Field ID 2 = Snmp Get Response Error Index Field * Field ID 3 = Variable Binding Field
	Field Terminator		Terminates the record data. Value = 0xFF:
TRAILER	CR	7.1	End of message flag. Value ≅ 0x0D.

The following describes the Variable Length Data Fields of an Snmp Get Next Reply Message (0x91):

SNMP Errror Status Field:

2			25/27/28 5/2/10 12/2 9/25/28m. **1904ff/20mm/mpt/mpt/mpt/mpt/mpt/mpt/mpt/mpt/mpt/m
	Name	Length	Description
The second second	Field ID	1 ***	The SNMP Error Status Field ID: Value = 0x01:
Sancia	Field Length	2	The length of the SNMP Error Status that follows. This value is sent in Network Byte Order.
MYKITT THE XXXXX	Field Data	2	The SNMP Error Status. This value is sent in Network Byte Order. See the SNMP Error status codes below for possible values.

SNMP Error Status codes:

Error 200 100	Description ***
NOERROR	SNMP RFC1157 Error Status 2 No Error
TOOBIG	SNMP RFC1157 Error Status - Packet is too big
NOSUCHNAME	SNMP RFC1157 Error Status No Such Name
BADVALUE	SNMP RFC1157 Error Status Bad Value
READONLY	SNMP RFC1157 Error Status - Read Only
GENERR	SNMP RFC1157 Error Status: General Error:
INVALID_REQUEST	An invalid request was sent to the appliance.
APPLIANCE_ERROR	The appliance was unable to process the request due to an internal error. (For example: Out of memory, Not enough resources).

Please refer to section 2.2.6 Status Codes for a list of the status code values.

SNMP GetResponse Errror Index Field:

Name .	Length	Description
Field ID		The SNMP GetResponse Error Index Field ID. Value = 0x02,
	19	The state of the s
Field Length	2	The length of the SNMP GetResponse Error Index that follows. This value is sent in Network Byte Order.
Field Data	2	The SNMP GetResponse Error Index. See RFC 1157. This value is
		sent in Network Byte Order. This value should be 0x0000 if the value for the SNMP Error Status Field is NOERROR.
	十二分 被强	INVALID_REQUEST, or APPLIANCE_ERROR.

Variable Binding Field:

In an Snimp Get Next Reply message the variable binding contains the next OID for the one that was contained in the corresponding Snimp Get Next Request as well as the value for the next OID. Please refer to section 2.1.2.2 Variable Binding Fields to see how Variable Bindings are encoded

		Name:	Length	Description 4 Section 4 Se
Field ID			1	The Variable Binding Field ID. Value = 0x03.
Field Length		2.	The total number of bytes in the Variable Binding Field that follows. This value is sent in Network Byte Order.	
	D	OID Type	1	Type indicating this is an OID: Value = 0x06: (ASN_OBJECTIDENTIFIER):
Field Data	Value of Next OID Next O	OID Len	2,	The length of the next OID. This value is sent in Network Byte. Order.
		OID	8-n	The next OID:
		Value Type	1.	Value type for the next OID requested.
		Value Len	2	Length of the Value. This value is sent in Network Byte Order.
		Válue	0-ñ	The value for the next OID requested.

Note: There may be multiple Variable Binding Fields in an Snmp Get Next Reply Message. There should be one for every Variable Binding that was requested in the Snmp Get Next Request Message.

The following is an example of an Snmp Get Next Reply Message (0x91) that would be returned in response to an Snmp Get Next Request for the MIB-II sysName OID (1.3.6.1.2.1.1.5):

MOUNTAINE STREET	Header	71.260 M.		A Record	Dátá 🛴 🦭	4.34
SOH Sig.	SEQ Cmd # ID	∰Rec. Len	Snmp Snmp Error Error	Snmp Var Error Bind	Var Bind	OID OID Type Len
1 "ASMP" 41.53 4D 50 "	145	64	**************************************		74 :::\$ 4.5 :::6	26

	The second programmer of the second s
. Car	Record Data (cont)
Also	OID Value
	136121160
	000 00 01 00 00 03 00 00 00 06 00 00 00 01 00 00 00 02 00 00 01 00 00 01 00 00 01 00 00 01 00 00

STATE OF		Record Data (comb): 14 CA	TOR	Ba Trailer Su
Value Type	Value Len	Value	Terin.	Trailer
4	13	"ENG_BUILDING1"	FF	CR
04	00 0D	45 4E 47 5F 42 55 49 4C 44 49 4E 47 31	FF	0D

2.2.6 Status Codes

Below is a list of all the status codes that exist for the AIDP protocol. To see the status codes that can be returned by a specific AIDP message, please refer to the Commands section.

String Grife	Erof C. S.	Description V V V V
0x0000	NOERROR	SNMP RFC1157 Error Status No Error
0x0001	TOOBIG	SNMP RFC1157 Error Status - Packet is too big
0x0002	NOSUCHNAME	SNMP RFC1157 Error Status - No Such Name
0x0003	BADVALUE	SNMP RFC1157 Error Status - Bad Value
0x0004	READONLY	SNMP RFC1157 Error Status Read Only
0x0005	GENERR	SNMP RFC1157 Error Status - General Error
0x0006	INVALID_REQUEST	An invalid request was sent to the appliance.
0x0007	APPLIANCE_ERROR	The appliance was unable to process the request due to an internal error. (For example: Out of memory, Not enough resources).
0x0008	IP_ADDRESS_ALREADY_EXISTS *	The appliance already has an IP address.

3. APPROVAL

This Protocol Specification requires the approval of each of the individuals listed below. By signing below, each member acknowledges that they understand and agree with the design documented herein and presented in a Design Review.

S/W Technical Lead

<u>りんり</u>のえ Date

Design Team Member

Date

Design Team Member

Date

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